ORIGINAL
FILE COPY

Florida Power
CORPORATION

James P. Fama
CORPORATE COUNSEL

October 29, 1990

Mr. Steve C. Tribble
Division of Records and Reporting
Florida Public Service Commission
101 East Gaines Street
Tallahassee, FL 32301

Re: Docket No. 900004-EG

Dear Mr. Tribble:

Enclosed for filing in the above-referenced docket is an original and fifteen (15) copies of Florida Power Corporation's Petition For Approval of Generation Plan.

Please acknowledge receipt and filing of the above by completing the form provided on the enclosed copy of this letter and returning same to this writer.

Very truly yours,

James P. Fama

James P. Fama

ACK ✓
AFA ____
APP ____
CAF ____
CMU ____
CTR ____
EAG ____
LEG 1
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OPC ____
RCH ____
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JPF/emh
Enclosures

DOCUMENT NUMBER-DATE
09763 OCT 30 1990
FPSC-RECORDS/REPORTING

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09762 OCT 30 1990
FPSC-RECORDS/REPORTING

Before The
Florida Public Service Commission

In Re: Petition For Approval Of Generation Plan	)	Docket No. _____
	)	
	)	Filed: October 30, 1990

FLORIDA POWER CORPORATION PETITION FOR APPROVAL OF GENERATION PLAN

Pursuant to Commission Order No. 23625 in Docket No 891049-EU (October 16, 1990), Florida Power Corporation (Florida Power) hereby petitions the Commission for approval of Florida Power's 1990 Facility Plan. In support of this Petition, Florida Power submits the following:

1. Florida Power encloses with this Petition the following documents:

(a) 1990 Facility Plan

(b) 1990 Generation Facility Study.

2. The 1990 Facility Plan is Florida Power's most recent 15-year generation plan, which complies the Commission's request for the most recent 10-year generation expansion plan. The 1990 Generation Facility Study is the document from which the Facility Plan was derived. Together with the Facility Plan, the Generation Facility Study documents Florida Power's reliability analyses, economic criteria for unit selection, and strategic considerations affecting unit selection.

3. Pursuant to Order No. 23625, Florida Power's 1990 Facility Plan excludes qualifying facilities not under contract as of October 1, 1990.

4. Pursuant to Florida Power's October 24, 1990 letter to Secretary Tribble, a copy of which is enclosed with this Petition, Florida Power will provide its standard offer contracts, accompanying tariffs and interconnection agreements, on or before November 15, 1990.

WHEREFORE, for the reasons stated above, Florida Power respectfully requests Commission approval of Florida Power's 1990 Facility Plan.

Submitted this 30th day of October, 1990.

OFFICE OF THE GENERAL COUNSEL
FLORIDA POWER CORPORATION

By: James P. Fama
JAMES P. FAMA
Corporate Counsel
P.O. Box 14042
St. Petersburg, FL 33733
(813) 866-5786

Florida Power
CORPORATION

James P. Fama
CORPORATE COUNSEL

October 24, 1990

Mr. Steve C. Tribble
Florida Public Service Commission
101 East Gaines Street
Tallahassee, FL 32301

Re: Filing Of Generation Plan, Standard Offer Contract And Accompanying Tariffs

Dear Mr. Tribble:

Florida Power Corporation is writing this letter to inform the Commission that Florida Power will not be able to file on October 30, 1990 all of the documents called for in Order No. 23625 in Docket No. 891049-EU. Florida Power will file its Generation Plan on the 30th. However, the standard offer contract and the accompanying qualifying facility tariffs will not be filed until November 15th, for the following reasons.

The recent changes to the Commission's new cogeneration rules are expansive. The conversion from a statewide approach to an individual utility approach involves making many changes to the existing contract and tariffs. For example, unlike the existing contracts and tariffs, the new standard offer contract and tariffs will encompass multiple avoided units and multiple pricing options.

There are other changes to the standard offer contract that Florida Power believes are necessary. For example, the current contract has no termination provision. This must be fixed. In addition, the availability and pricing of transmission transfer capacity from northern to central Florida must be reflected.

As we deal with these many complex issues, we are seeking to keep the standard offer relatively short, simple and easy to administer. Meeting all of these goals takes a significant amount of time, and that is why Florida Power needs an additional 15 days to file these documents. We feel that taking this extra time up front will save much more time later down the road as these documents are used again and again.

Florida Power has received a tentative opinion from the Staff that given projected hearing dates, a 15-day delay in filing of the standard offer contract and tariffs ultimately will not cause delay should these matters be set for hearing.

Very truly yours,

James P. Fama

James P. Fama

JPF/emh

cc: James Dean
Jennifer Harvey

FLORIDA POWER CORPORATION

1990 FACILITY PLAN

Background

This Facility Plan was prepared pursuant to Commission Order No. 23625 implementing the Commission's new cogeneration rules. It reflects Florida Power's current generation expansion plan, excluding firm qualifying facility capacity not under contract as of October 1, 1990.

In January 1990 Florida Power began a Generation Facility Study of its capacity needs through the year 2005. The Facility Plan would eventually result from the Generation Facility Study. The purpose of the Generation Facility Study was to develop an integrated least cost generation Facility Plan consistent with financial and business objectives, and designed to maximize flexibility, minimize risk, and satisfy all regulatory, environmental and reliability requirements. The Generation Facility Study was completed in August 1990.

Demand Side Planning

The Facility Plan incorporates major contributions to system capacity by demand side programs. The Load Management Program was assumed to be accelerated, reaching a saturation of 50% of FPC customers. The winter load demand reduction by the year 2005 is forecast to be 1272 MW. Additional conservation programs are included in the Facility Plan as reductions in the demand and energy forecast. By the winter of the year 2005, the demand reduction due to conservation programs (not including Load Management or voltage reduction) is expected to be 244 MW.

Clean Air Legislation

Florida Power expects the new Clean Air Act legislation to impose Sulfur Dioxide (SO_2) emission limits on Florida Power's system. These limits are one of the most significant factors in planning facilities through the year 2005. The Facility Plan recommendation of two 700 MW pulverized coal plants with 90% efficient scrubbers, and fuel switching at other existing plants, will cause enough SO_2 emission reductions to meet the requirements of the expected legislation. However, a key element of the Facility Plan is the expected addition of cogeneration (1134 MW by the year 2005). It was assumed that cogeneration capacity would not contribute to Florida Power's SO_2 emission total, providing, in effect, base load capacity with no SO_2 emission's.

Methodology

Florida Power plans for future capacity additions by first making estimates of the following key variables.

1. Demand and Energy Growth
2. General Inflation Rates
3. Energy Management
4. Fuel Prices
5. Capital Cost of Alternatives
6. Available technologies
7. Regulatory Limits on SO_2 Emissions
8. Cogeneration Capacity Additions

The planning process is depicted in **Figure 1, 1990 Facility Plan**, attached hereto. One of the inputs into this planning process was the forecast of future cogeneration additions. Florida Power forecasted that a substantial amount of cogeneration capacity (1134 MW by the year 2005) would be added to the system. The cogeneration forecast is depicted in Figure 6 of the Generation Facility Study.

In order to comply with the Commission requirement to exclude qualifying facilities not under contract as of October 1, 1990, Florida Power's cogeneration forecast was modified to include only facilities under contract. The impact of this lower cogeneration capacity forecast was then evaluated and the Facility Plan was modified to meet the objectives of the Plan as originally devised.

Future cogeneration, forecasted by FPC but not under signed contracts, was replaced by a 700 MW pulverized coal plant in November 2002. This base load plant replaces the 70% capacity factor cogeneration. The pulverized coal plant provides low cost base load energy to replace the energy provided by the forecasted cogeneration. In addition, the 90% efficiency scrubbers reduce the total SO_2 emissions by approximately the same amount as the cogeneration power purchases.

The in-service dates for three of the combustion turbines were modified to maintain system reliability. The two 150 MW advanced combustion turbines originally scheduled for service in 2002 and 2004, respectively, and the 150 MW advanced combustion turbines scheduled for 1997, were all moved forward to 1992.

The movement of 450 MW of capacity to 11/1992 was prompted by the need to add capacity as soon as possible to meet the expected system requirements in the early 1990's. Due to the short lead time to build this capacity, the most likely construction would be combustion turbines.

Florida Power's Standard Offer Contract

For purposes of QF pricing for the Standard Offer Contract, the 450 MW of combustion turbine capacity due in 1992 was divided between combustion turbines and pulverized coal capacity. In other words, as the combustion turbine MW were replaced with pulverized coal MW in 1992, a corresponding amount of 2002 pulverized coal MWs was replaced with MW of combustion turbine capacity, such that the total mix of combustion turbines and pulverized coal capacity remained constant. See Figure 2, Facility Plan For Standard Offer Contract Pricing, attached hereto.

Florida Power concluded that the lowest revenue requirement for its ratepayers would result from pricing on the basis of 1992 additions of 300 MW of pulverized coal capacity and 150 MW of combustion turbine capacity. This reduced the 11/2002 coal unit to 400 MW, and caused 300 MW of combustion turbines to be shown in 11/2002.

FIGURE 1

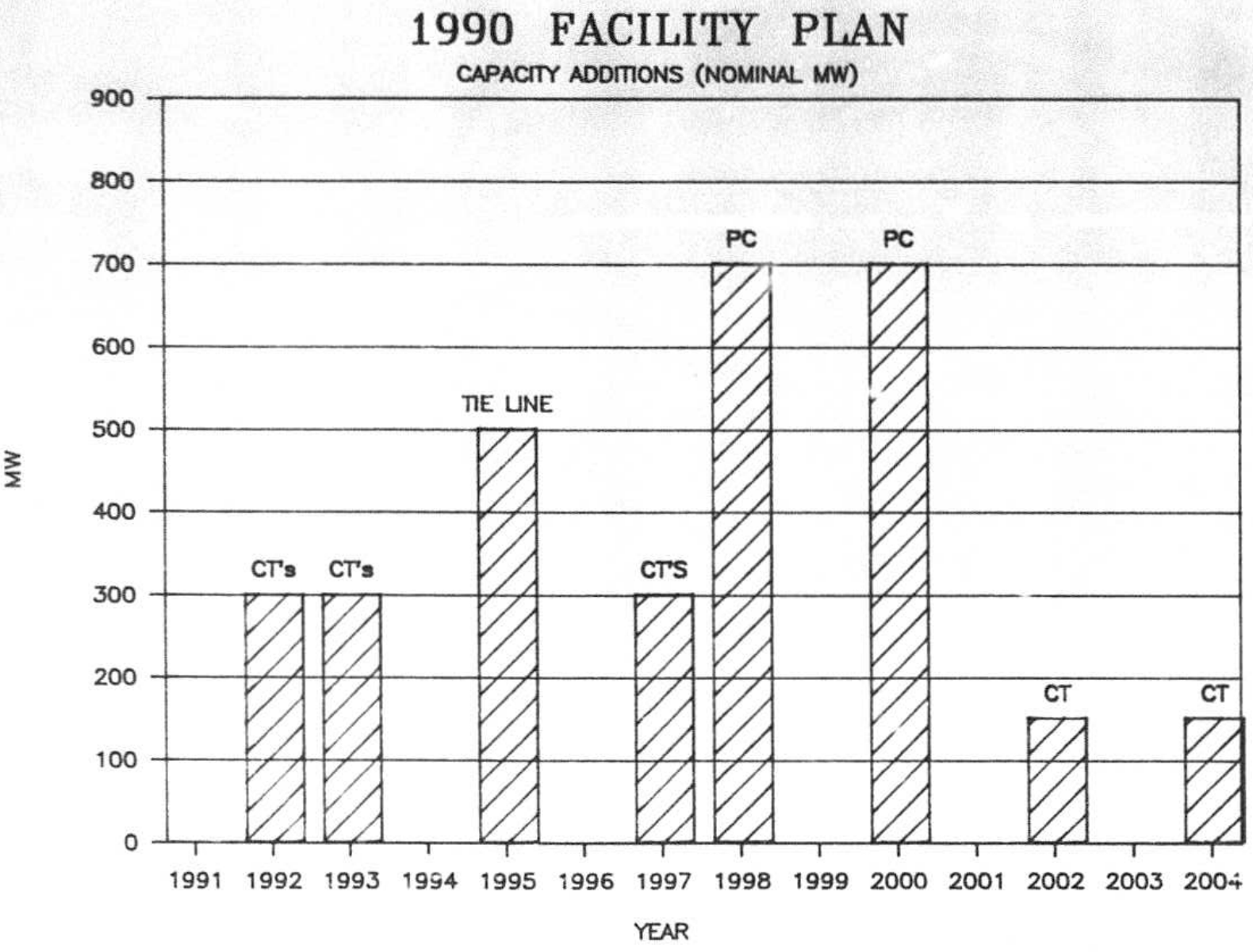
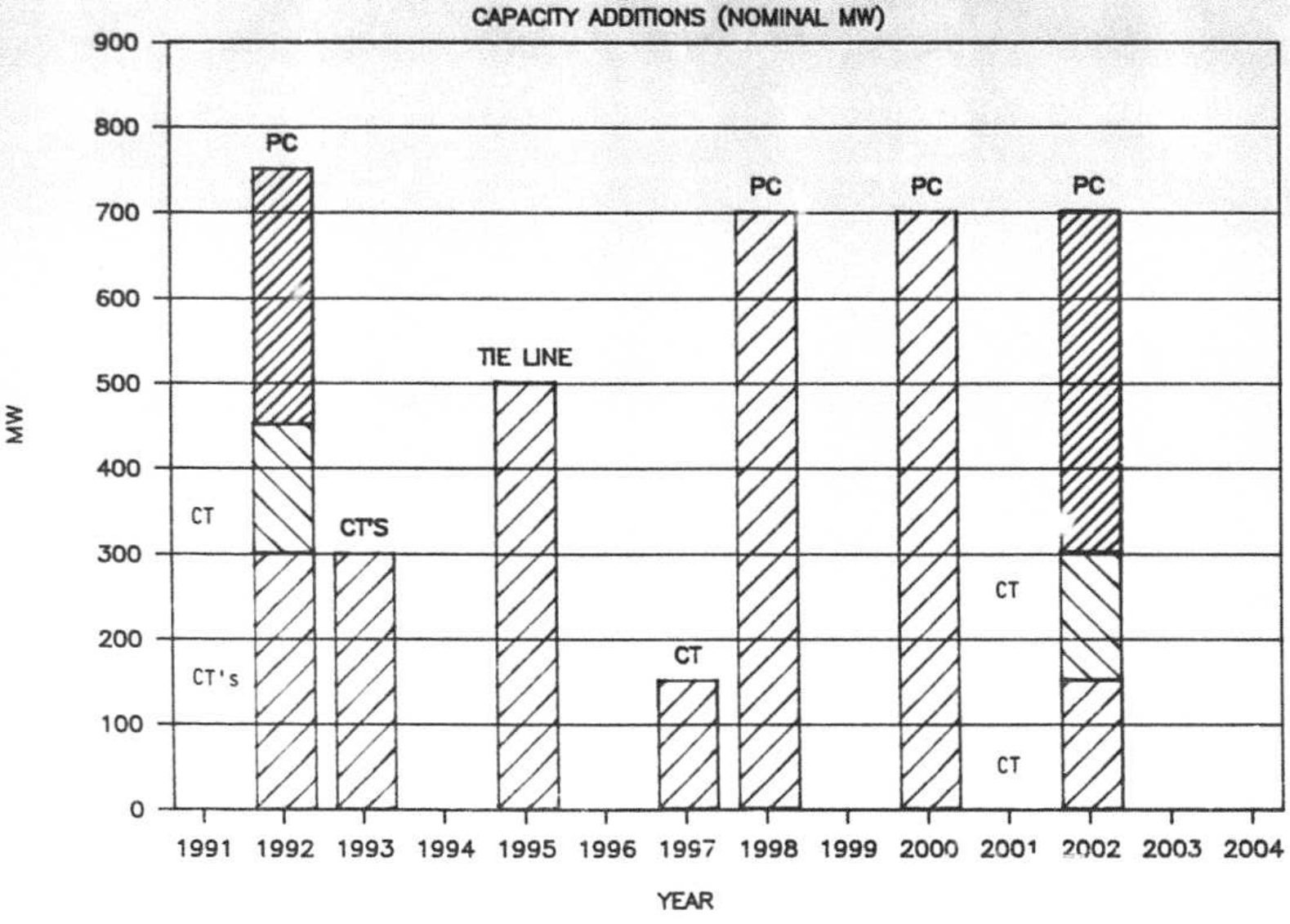

1990 FACILITY PLAN
CAPACITY ADDITIONS (NOMINAL MW)
MW
900
800
700
600
500
400
300
200
100
0
CT's
CT's
TIE LINE
CT'S
PC
PC
CT
CT
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
YEAR

FIGURE 2

FACILITY PLAN FOR STD OFFER CONTRACT



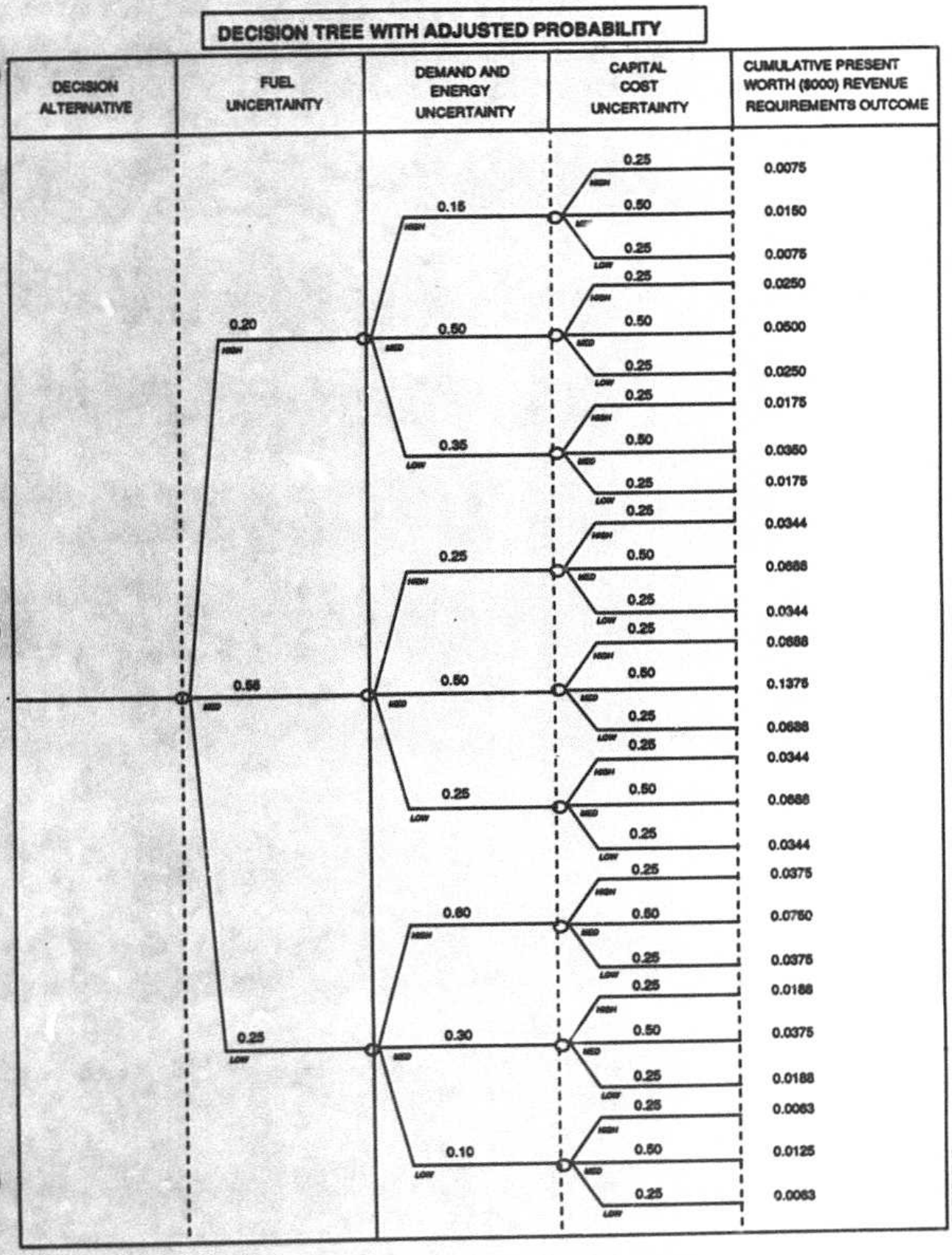

DECISION TREE WITH ADJUSTED PROBABILITY
DECISION ALTERNATIVE
FUEL UNCERTAINTY
DEMAND AND ENERGY UNCERTAINTY
CAPITAL COST UNCERTAINTY
CUMULATIVE PRESENT WORTH ($000) REVENUE REQUIREMENTS OUTCOME
0.20
HIGH
0.56
MED
0.25
LOW
0.15
HIGH
0.50
MED
0.35
LOW
0.25
HIGH
0.50
MED
0.25
LOW
0.60
HIGH
0.30
MED
0.10
LOW
0.25
0.50
0.25
0.0075
0.0150
0.0075
0.0250
0.0500
0.0250
0.0175
0.0350
0.0175
0.0344
0.0688
0.0344
0.0688
0.1375
0.0688
0.0344
0.0688
0.0344
0.0375
0.0750
0.0375
0.0188
0.0375
0.0188
0.0063
0.0125
0.0063

Figure 15

VI. Results

Decision analysis is used to study the generation expansion alternatives. The result is an optimal generation expansion plan. The key factors used to determine the plan are listed as follows:

1. Expected Cumulative Present Worth of Revenue Requirement (CPWRR) and Profit Risk.

2. Fuel Flexibility and Supply Risk.

3. Capital Investment and Risk.

4. Emission Control Flexibility.

5. Operational Flexibility.

The results of the decision analysis based on the key factors are summarized as follows:

1. Expected Cumulative Present Worth of Revenue Requirement (CPWRR) and Profit Risk.

   The decision analysis calculated the expected cumulative present worth of revenue requirement for each alternative. It is based on the twenty-seven individual PROSCREEN runs which reflected various uncertainties for the 30-year study period. The differential CPWRR

were compared to one another graphically on a yearly basis. This was used to determine the relative cost of each alternative as well as the timing of those costs. The differential CPWRR comparison was also made on the cumulative probability basis for the study period. This will help to determine the relative profit risk involved in each alternative selected.

The study results show that alternative 5 has a lower CPWRR when compared to all of the other alternatives except alternative 10 A. Alternative 10 A assumes that Orimulsion gasifiers added at Bartow and Anclote will allow those sites to run on syngas. This alternative has high fuel supply and technological risks. However, due to its possible fuel savings and emission improvement the Orimulsion gasification concept was incorporated into the Facility Plan recommendations. Figures 16, 17 and 18 show the CPWRR comparisons. Figures 19, 20 and 21 show the risk analysis corresponding to the CPWRR comparisons.

2. Fuel Flexibility and Supply Risk.

Florida Power Corporation has always emphasized the importance of fuel flexibility and supply risk. Combustion turbines and combined cycle units have the fuel flexibility of burning oil and gas, but the risk of the fuel supply may be high. However, the supply risk can be minimized by installing a gasifier to produce syn-gas from coal only if the cost can be economically justified.

COMPARISON OF CUMULATIVE PRESENT WORTH REVENUE REQUIREMENTS

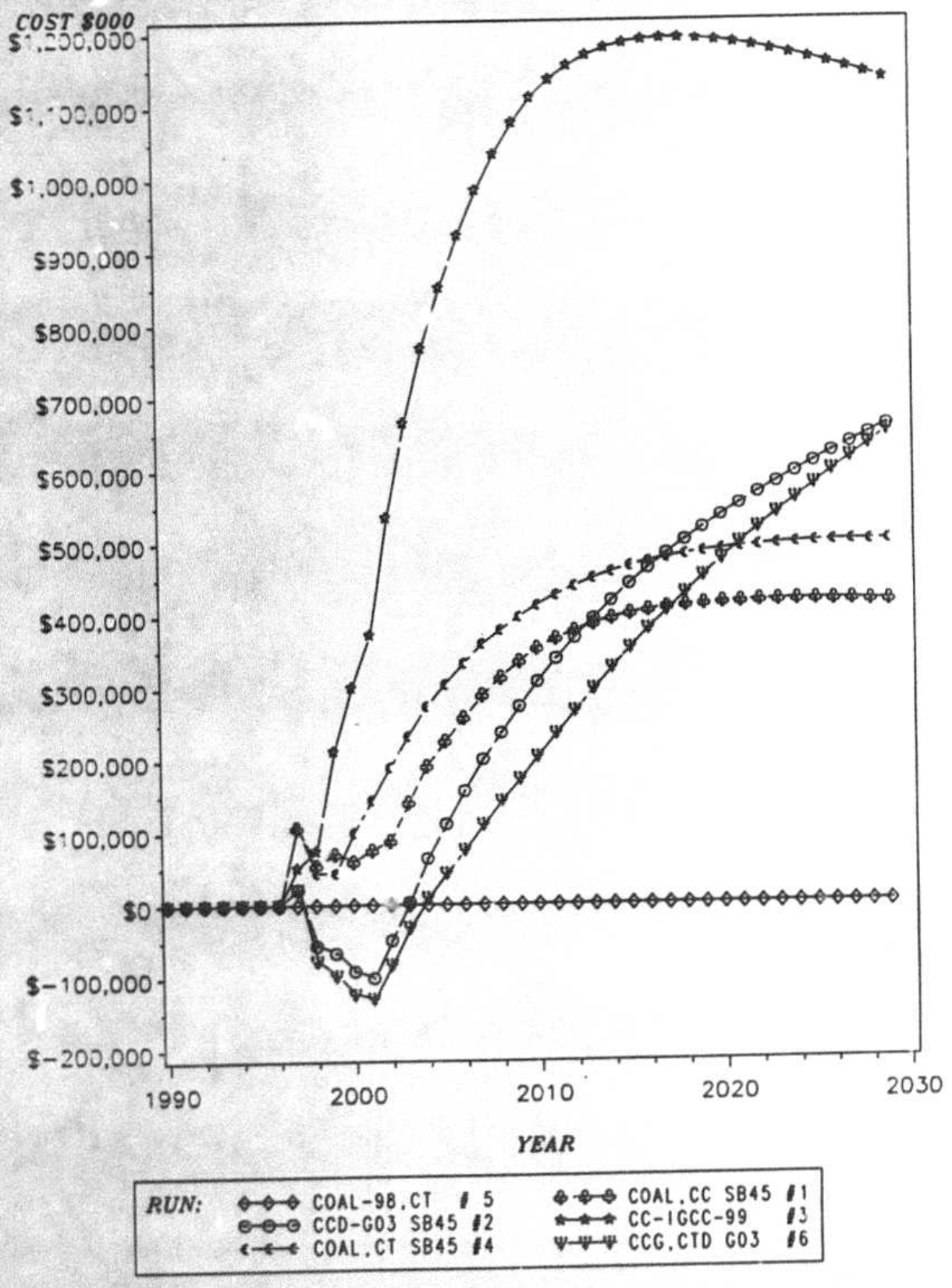


Figure 16

COMPARISON OF CUMULATIVE PRESENT WORTH REVENUE REQUIREMENTS

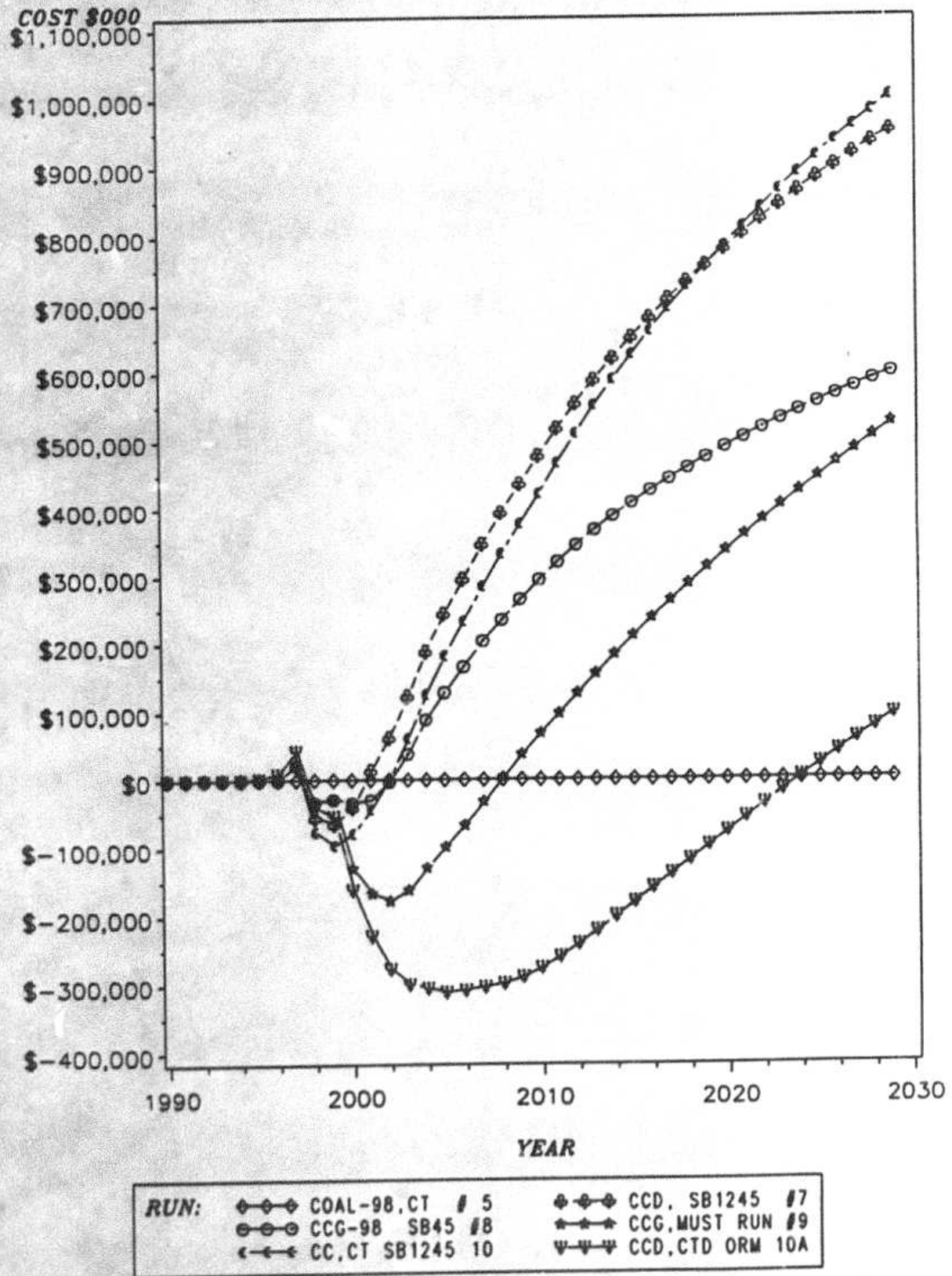


Figure 17

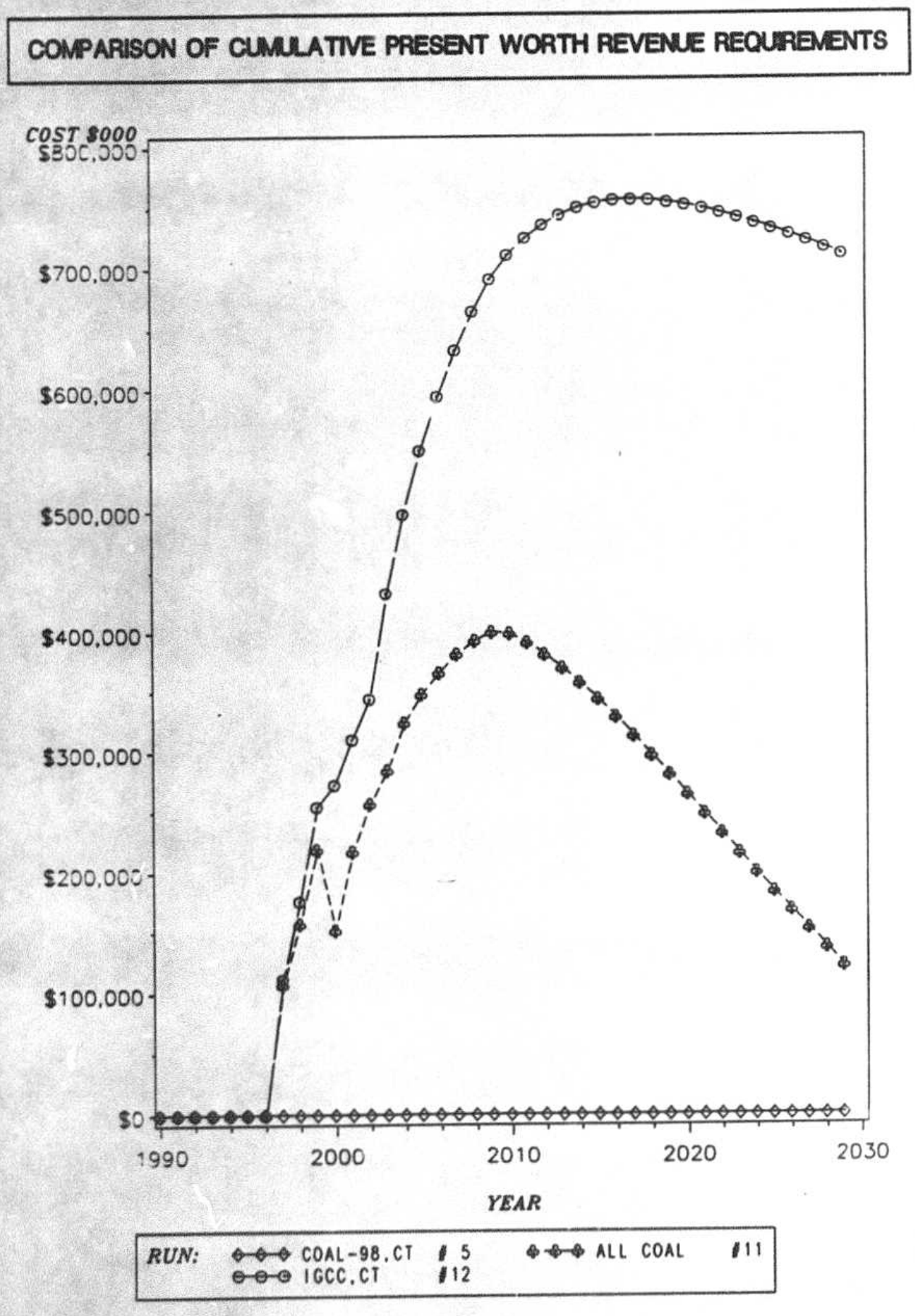

COMPARISON OF CUMULATIVE PRESENT WORTH REVENUE REQUIREMENTS
COST $000
$800,000
$700,000
$600,000
$500,000
$400,000
$300,000
$200,000
$100,000
$0
1990
2000
2010
2020
2030
YEAR
RUN:
COAL-98.CT #5
IGCC.CT #12
ALL COAL #11

Figure 18

CUMULATIVE PRESENT WORTH COST COMPARISON TO BASE CASE # 5

YEAR=2019

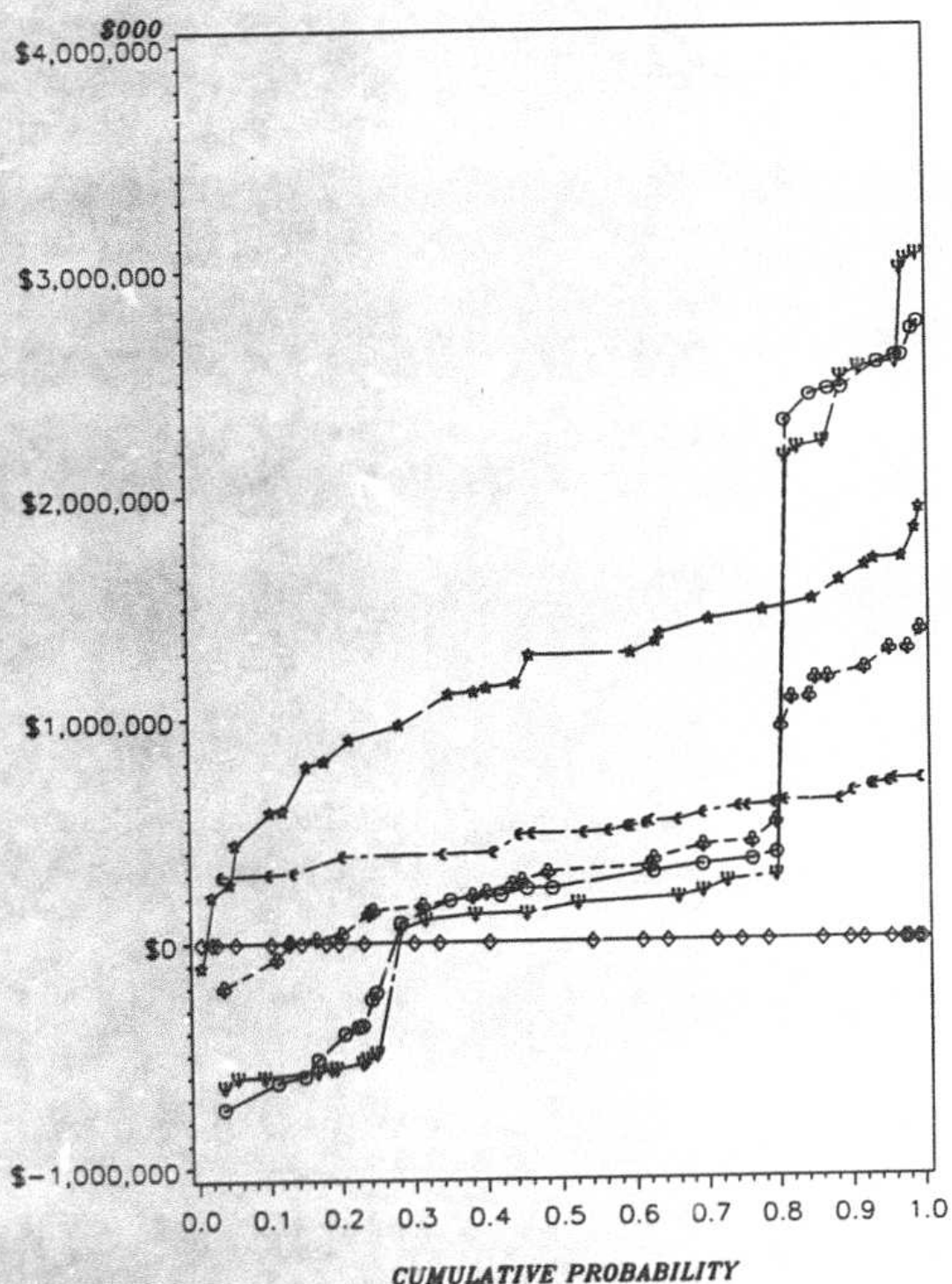


Figure 19

CUMULATIVE PRESENT WORTH COST COMPARISON TO BASE CASE # 5

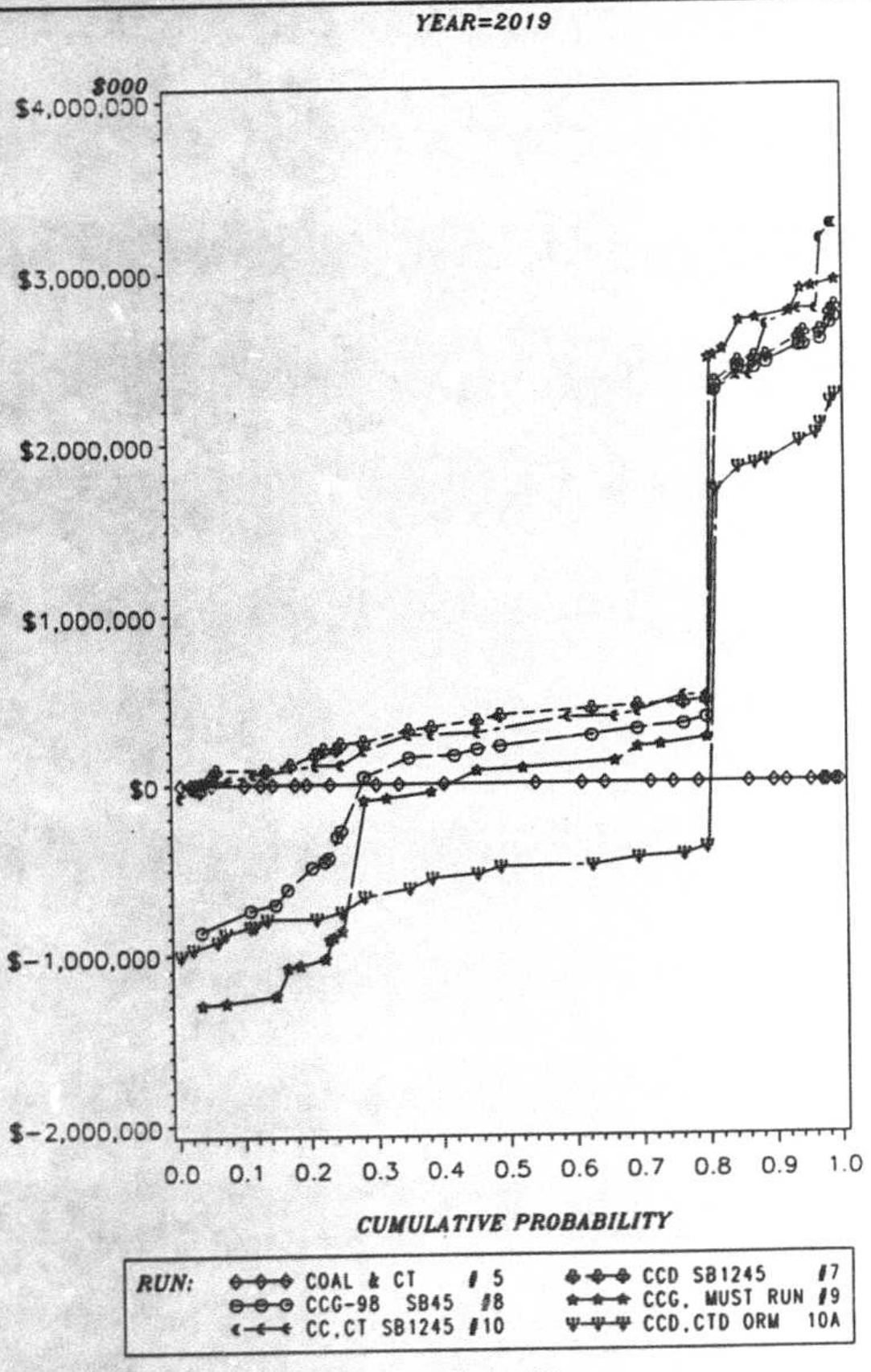


Figure 20

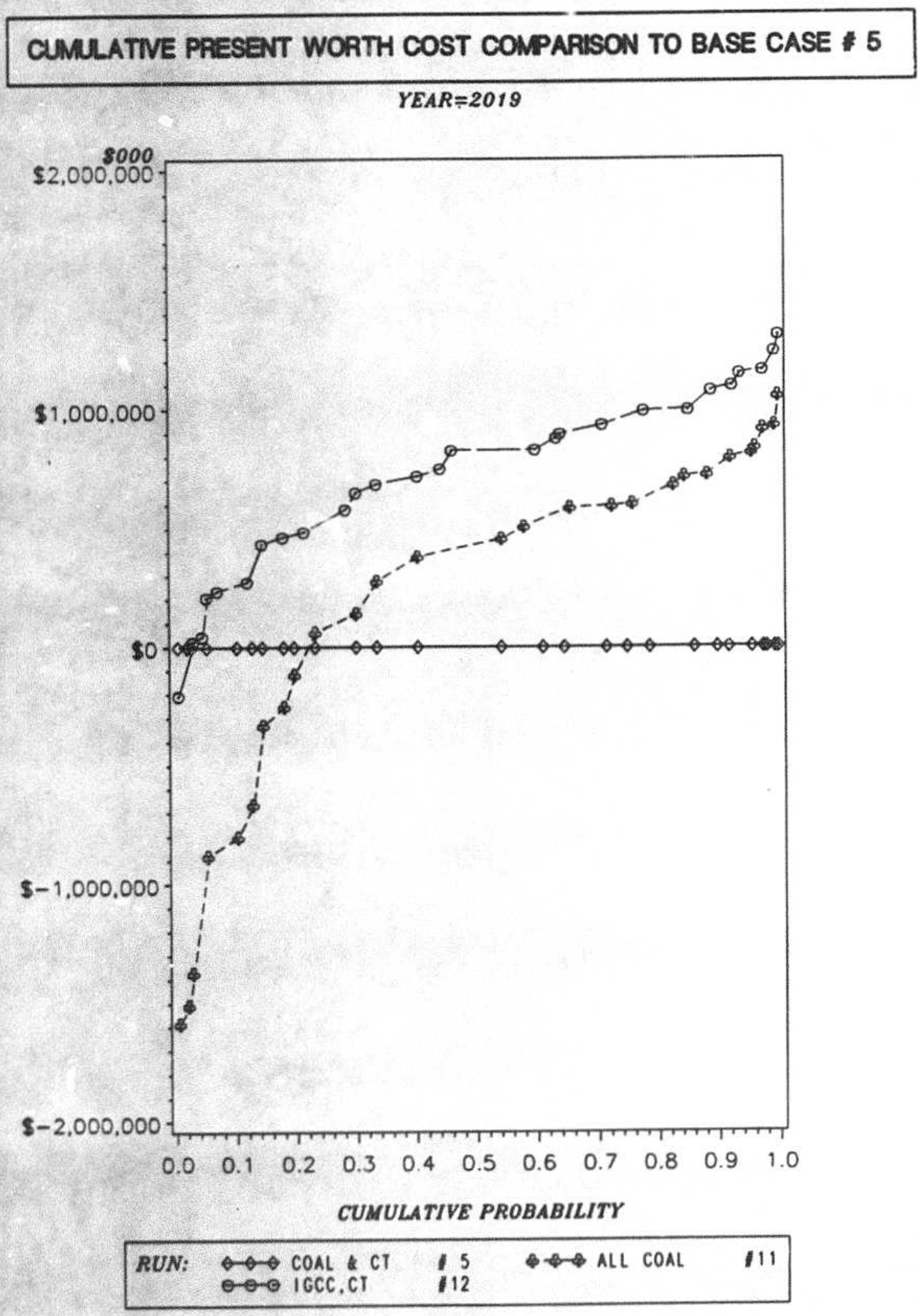

CUMULATIVE PRESENT WORTH COST COMPARISON TO BASE CASE # 5
YEAR=2019
$000
$2,000,000
$1,000,000
$0
$-1,000,000
$-2,000,000
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
CUMULATIVE PROBABILITY
RUN:
COAL & CT # 5
IGCC,CT #12
ALL COAL #11

Figure 21

A pulverized coal unit can only burn coal, but the supply of coal is considered to be relatively secure. Since Florida Power Corporation currently does not have a long-term gas contract, and there is always a risk involved in being dependent on the supply of foreign oil, the alternatives with coal as a major fuel source were considered to be more secure in terms of fuel supply.

3. Capital Investment and Risk.

The amount of capital expenditure is dictated by the type of capacity alternative selected. The higher the capital investment, the bigger the financial risk will be. Peaking facilities normally have the lowest capital investment, which is offset by higher fuel costs. Combined cycle units provide a moderate capital investment with moderate to high fuel costs. The coal units generally have a large capital investment, with the lowest fuel costs. The IGCC has the highest capital investment, with the fuel costs the same as that for the coal units. Whether or not Florida Power Corporation can tolerate the financial risk of the recommended alternative in the near future will have to be further evaluated.

4. Emission Control Flexibility.

The final version of the Clean Air Act Bill has not been enacted. When the sulfur emission limit for Florida Power Corporation is identified, there is a chance of it being amended in the future. It is important to select the alternative which can best respond

to changing emission limits. Switching from high sulfur fuel to low sulfur fuel and scrubbing the coal units are two of many ways to control the emissions. The fuel switching is less expensive and requires less time than scrubbing. Alternative 5 which has coal units in 1998 and in 2000 with fuel switching for emission controls is more economical than the alternatives with combined cycles. The combined cycle option employed scrubbers on the existing coal units. Alternatively, they could be used as "must run" units on clean fuel for emission controls.

5. Operational Flexibility.

Future operational flexibility is a key factor to consider in making the selection of a capacity alternative. It is important that a system has a balanced mixture of different types of generation, so that it can respond whether it has a low load factor or a relatively high load factor. Alternative 5 has a generation mix of base load units at 61-percent, mid-range units at 13-percent and peaking units at 4-percent. The next best alternative which is alternative 10A, has a generation mix of base load units at 44-percent, mid-range units at 22-percent and peaking units at 12-percent. Based on the expected revenue requirement, alternative 5 responds the best under the sensitivity of the demand and energy forecast.

A complete set of detailed description and results for each alternative is included in the Appendix A.

VII. Recommendation

The 1990 Generation Facility Study has reviewed the capacity needs for Florida Power Corporation. Based on the current corporate assumptions, the recommendations are formulated as follows:

1. Construct a 700 MW pulverized coal unit in 1998 and 2000, with combustion turbines in 1997, 2002, and 2004, all units to be placed in service in November of the year. Switch Bartow Plant to consume 1.0-percent sulfur oil and Crystal River Units 1 & 2 to consume 0.7-percent sulfur coal by January 2001. This combination would meet the system design limit of 130,000 tons of SO_2 without the addition of scrubbers on existing units. Emissions are reduced because the new pulverized coal plants, burning less expensive 1.0-percent sulfur coal, become base loaded and has low emissions with 90-percent scrubbers. These units will displace older, less efficient existing generation, reducing overall system sulfur emissions.

2. Vigorously pursue the gasification technology, either with orimulsion or with coal.

3. Actively investigate the opportunities for investment in IGCC technology for possible substitution for the second pulverized coal unit.

4. Continue to monitor the Clean Air regulation and be prepared to make appropriate accommodations.

APPENDIX A

ALTERNATIVE 1
PULVERIZED COAL AND COMBINED CYCLE

DESCRIPTION:

COMBINATION OF 1 – 700 MW COAL, 7 – 235 MW COMBINED CYCLES WITH A TOTAL INSTALLED CAPACITY OF 2345 MW. GAS CONTRACT SECURED IN 2003.

SO2 EMISSION MODIFICATION:

SCRUB CR 4 & 5 AT 90% & CONVERT 0.7% TO 1.1% SULFUR COAL, ALL COMBINED CYCLE UNITS ON GAS IN 2003.

SO2 EMISSION TONAGE:

2001:	129,995
2005:	129,108

AVAILABLE FUTURE EMISSION CONTROL MEASURES:

OPERATIONAL:

1. CONVERT CR 1 & 2 FROM 1.1% TO 0.7% SULFUR COAL (–20,000 TONS)
2. CONVERT BARTOW FROM 2.5% TO 1.0% SULFUR OIL (–12,000 TONS)
3. CONVERT TURNER & SUW FROM 2.5% TO 1.0% SULFUR OIL (–6,000 TONS)

CAPITAL INVESTMENT:

SCRUB CR 1 & 2.

GENERATION MIX BY FUEL TYPES IN 2005:

COAL	41.77%	OIL	15.17%	MILLER	5.24%
NUCLEAR	10.51%	DISTILLATE	1.25%	QF	14.40%
GAS	8.19%	PURCHASE	3.47%		

CAPACITY MIX BY FUEL TYPES IN 2005:

COAL	23.93%	OIL	16.04%	MILLER	3.31%
NUCLEAR	6.29%	DISTILLATE	20.19%	QF	9.97%
GAS	13.60%	PURCHASE	6.67%		

ACCUMULATED PW REVENUE REQUIREMENT (1990–2019): $21,106,545,000

RISK ANALYSIS:

THERE IS A 11.2% CHANCE THAT THIS ALTERNATIVE WILL HAVE A LOWER ACCUMULATED PW REVENUE REQUIREMENT THAN ALTERNATIVE 5.

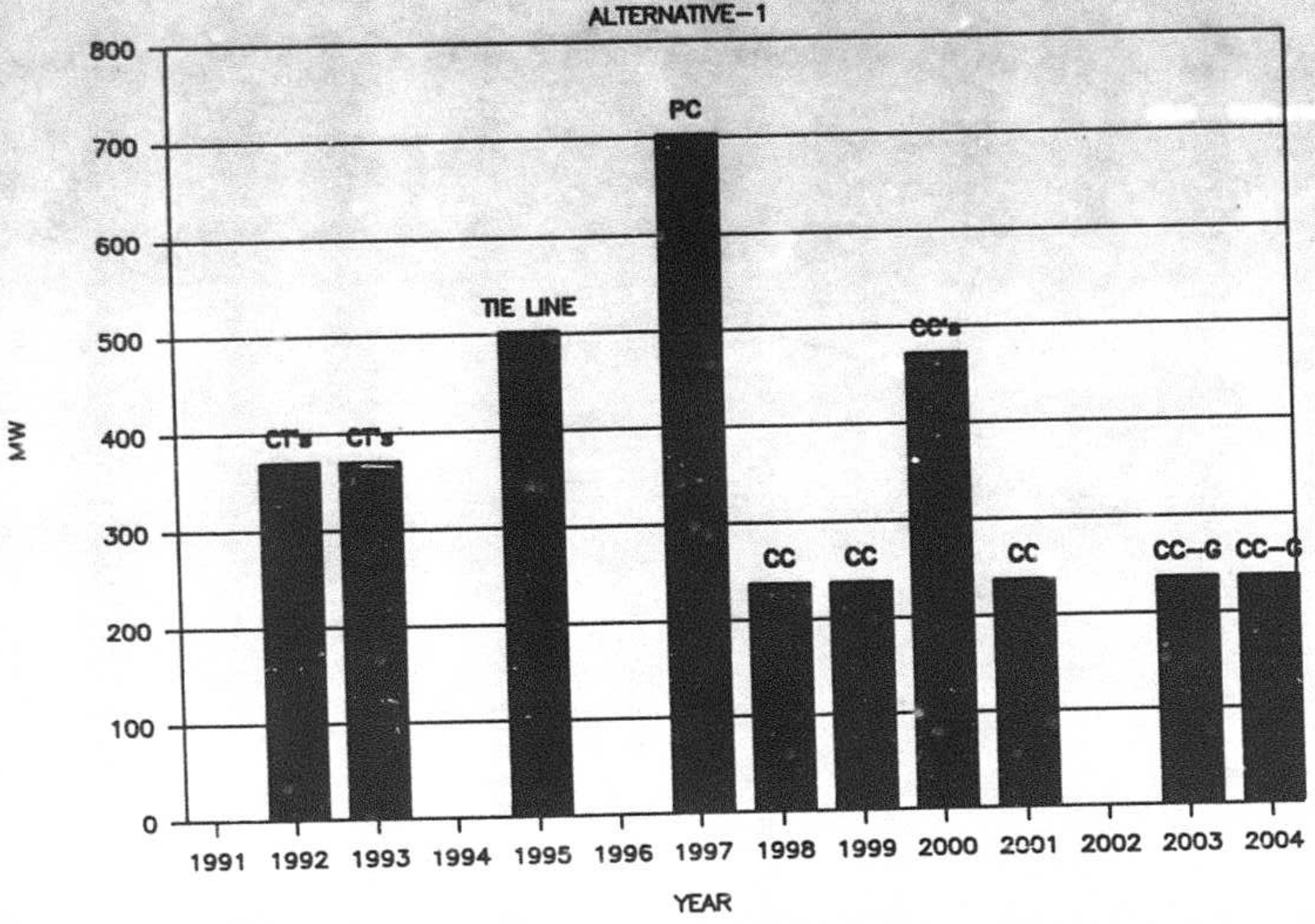
ADVANTAGES:

1. FUEL SWITCHING CAPABILITY FOR EMISSIONS.
2. COMBINED CYCLE UNITS HAVE SMALL UNIT SIZE AND SHORTER CONSTRUCTION LEAD TIME.

DISADVANTAGES:

1. MUST SCRUB CRYSTAL RIVER 4 & 5.
2. CUMULATIVE PW REV REQ IS $414 MILLION MORE THAN ALTERNATIVE 5.
3. REQUIRES NEW GAS SUPPLY.

1990 GENERATION FACILITY STUDY



ALTERNATIVE 2
COMBINED CYCLE WITH GAS CONVERSION IN 2003

DESCRIPTION:

10 – 235 MW COMBINED CYCLES WITH A TOTAL INSTALLED CAPACITY OF 2350 MW. SECURE GAS CONTRACT IN 2003.

SO2 EMISSION MODIFICATION:

SCRUB CR 4 & 5 AT 90% & CONVERT 0.7% TO 1.1% SULFUR COAL,
CONVERT BARTOW FROM 2.5% TO 1.0% SULFUR OIL,
CONVERT ALL COMBINED CYCLE UNITS TO GAS IN 2003.

SO2 EMISSION TONAGE:

2001:	125,112
2005:	116,115

AVAILABLE FUTURE EMISSION CONTROL MEASURES:

OPERATIONAL:

1. CONVERT CR 1 & 2 FROM 1.1% TO 0.7% SULFUR COAL (–20,000 TONS)
2. CONVERT TURNER & SUWANNEE FROM 2.5% TO 1.0% SULFUR OIL (–6,000 TONS)

CAPITAL INVESTMENT:

SCRUB CR 1 & 2.

GENERATION MIX BY FUEL TYPES IN 2005:

COAL	32.18%	OIL	17.25%	MILLER	6.05%
NUCLEAR	10.51%	DISTILLATE	1.22%	QF	14.40%
GAS	14.94%	PURCHASE	3.45%		

CAPACITY BY FUEL TYPES IN 2005:

COAL	18.14%	OIL	16.03%	MILLER	3.31%
NUCLEAR	6.28%	DISTILLATE	20.18%	QF	9.97%
GAS	19.43%	PURCHASE	6.66%		

ACCUMULATED PW REVENUE REQUIREMENT (1990–2019): $21,211,625,000

RISK ANALYSIS:

THERE IS A 28.4% CHANCE THAT THIS ALTERNATIVE WILL HAVE A LOWER ACCUMULATED PW REVENUE REQUIREMENT THAN ALTERNATIVE 5.

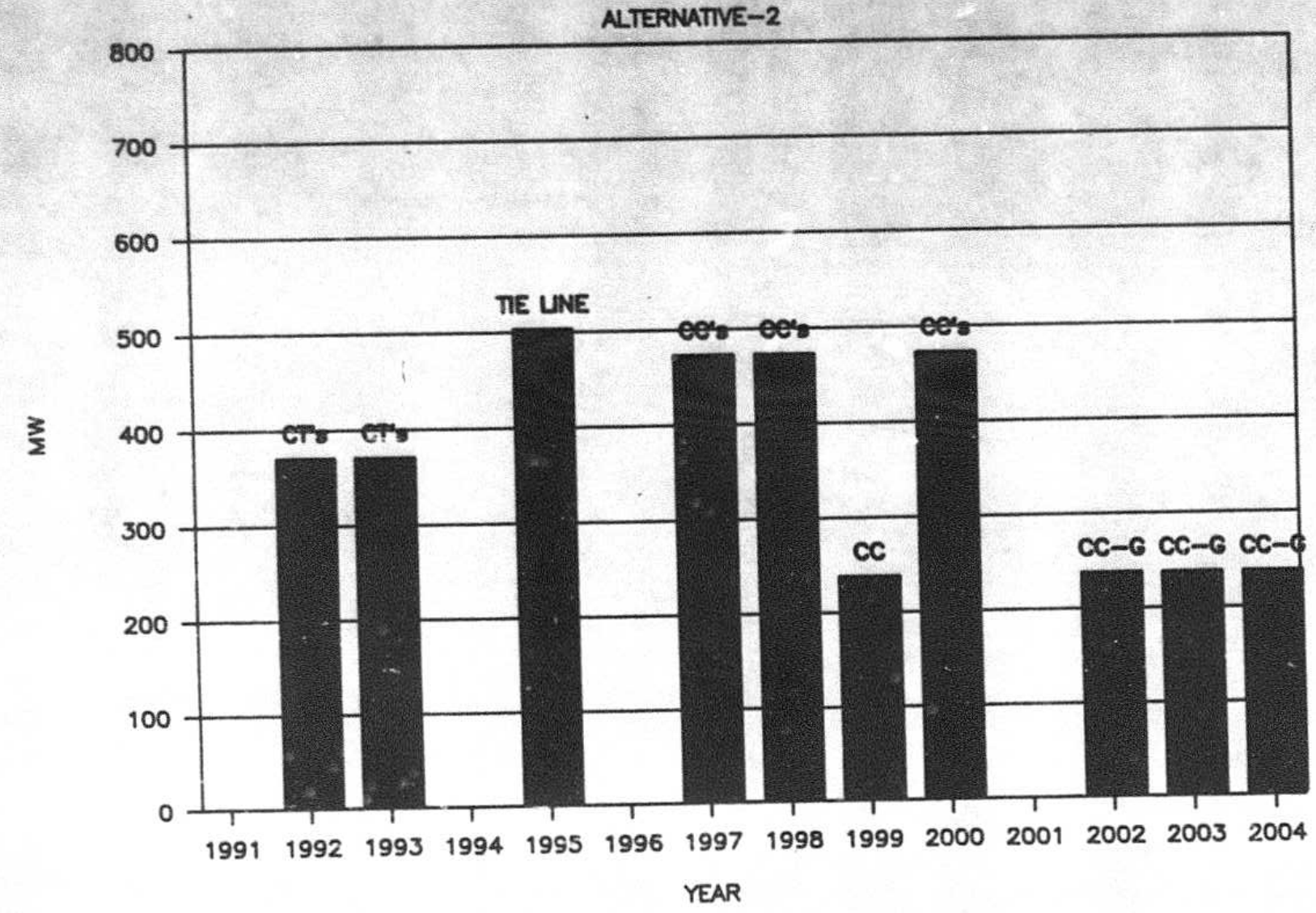
ADVANTAGES:

1. COMBINED CYCLE UNITS HAVE SMALL UNIT SIZE AND SHORTER CONSTRUCTION LEAD TIME.

DISADVANTAGES:

1. ATTRACTIVE IN LOW FUEL SCENARIOS.
2. CUM PW REV REQ IS $520 MILLION MORE THAN ALTERNATIVE 5.
3. REQUIRES NEW GAS SUPPLY.

1990 GENERATION FACILITY STUDY



ALTERNATIVE 3
COMBINED CYCLE WITH CONVERSION TO IGCC

DESCRIPTION:

4 – 235 MW COMBINED CYCLES, CONVERT TO IGCC IN 1999 & 2000, ADD 1 – 310 MW IGCC IN 2000 & 1 – 580 MW IGCC IN 2002, WITH A TOTAL INSTALLED CAPACITY OF 2130 MW.

SO2 EMISSION MODIFICATION:

CONVERT BARTOW FROM 2.5% TO 1.0% SULFUR OIL.

SO2 EMISSION TONAGE:

2001:	128,523
2005:	123,810

AVAILABLE FUTURE EMISSION CONTROL MEASURES:

OPERATIONAL:

1. CONVERT CR 1 & 2 FROM 1.1% TO 0.7% SULFUR COAL (–20,000 TONS).
2. CONVERT TURNER & SUWANNEE FROM 2.5% TO 1.0% SULFUR OIL (–4,000 TONS).

CAPITAL INVESTMENT:

SCRUB CR 1, 2, 4 & 5.

GENERATION MIX BY FUEL TYPES IN 2005:

COAL	58.55%	OIL	8.15%	MILLER	3.15%
NUCLEAR	10.51%	DISTILLATE	1.39%	QF	14.40%
GAS	0.38%	PURCHASE	3.47%		

CAPACITY MIX BY FUEL TYPES IN 2005:

COAL	36.72%	OIL	16.25%	MILLER	3.35%
NUCLEAR	6.37%	DISTILLATE	20.45%	QF	10.10%
GAS	0.00%	PURCHASE	6.76%		

ACCUMULATED PW REVENUE REQUIREMENT (1990–2019): $21,882,446,000

RISK ANALYSIS:

THERE IS A 0.8% CHANCE THAT THIS ALTERNATIVE WILL HAVE A LOWER ACCUMULATED PW REVENUE REQUIREMENT THAN ALTERNATIVE 5.

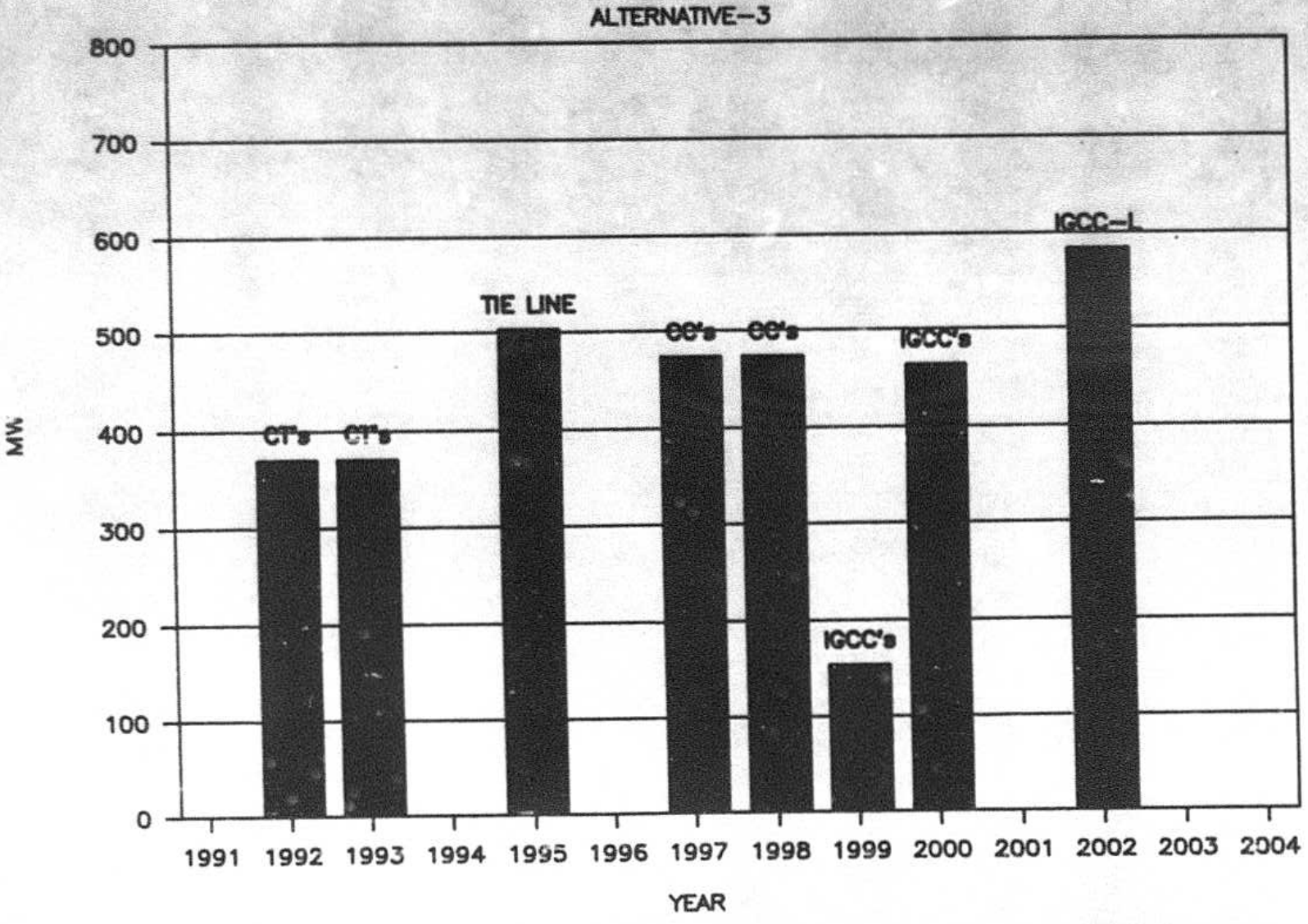
ADVANTAGES:

1. FUEL SUPPLY SECURITY.
2. IGCC CAN BURN VERY HIGH SULFUR (5%) COAL.
3. CLEANEST TECHNOLOGY.
4. NO SCRUBBING OF EXISTING COAL UNITS IS REQUIRED.

DISADVANTAGES:

1. MOST EXPENSIVE ALTERNATIVE.
2. UNPROVEN TECHNOLOGY.
3. CUM PW REV REQ IS $1.2 BILLION MORE THAN ALTERNATIVE 5.

1990 GENERATION FACILITY STUDY



ALTERNATIVE 4
PULVERIZED COAL AND COMBUSTION TURBINES (SCRUB CR 4&5)

DESCRIPTION:

2 – 700 MW PULVERIZED COAL UNITS AND 6 – 165 MW COMBUSTION TURBINES, WITH A TOTAL INSTALLED CAPACITY OF 2390 MW.

SO2 EMISSION MODIFICATION:

SCRUB CR 4 & 5 AT 90%, CONVERT FROM 0.7% TO 1.1% SULFUR COAL.

SO2 EMISSION TONAGE:

2001:	112,813
2005:	127,241

AVAILABLE FUTURE EMISSION CONTROL MEASURES:

OPERATIONAL:

1. CONVERT CR 1 & 2 FROM 1.1% TO 0.7% SULFUR COAL (–20,000 TONS)
2. CONVERT TURNER & SUWANNEE FROM 2.5% TO 1.0% SULFUR OIL (–5,000 TONS)

CAPITAL INVESTMENT:

SCRUB CR 1, 2.

GENERATION MIX BY FUEL TYPES IN 2005:

COAL	49.55%	OIL	13.30%	MILLER	4.10%
NUCLEAR	10.51%	DISTILLATE	3.65%	QF	14.40%
GAS	0.72%	PURCHASE	3.77%		

CAPACITY MIX BY FUEL TYPES IN 2005:

COAL	29.95%	OIL	11.74%	MILLER	2.42%
NUCLEAR	4.60%	DISTILLATE	20.77%	QF	7.30%
GAS	0.00%	PURCHASE	4.89%		

ACCUMULATED PW REVENUE REQUIREMENT (1990–2019): $21,177,903,000

RISK ANALYSIS:

THERE IS A 0.0% CHANCE THAT THIS ALTERNATIVE WILL HAVE A LOWER ACCUMULATED PW REVENUE REQUIREMENT THAN ALTERNATIVE 5.

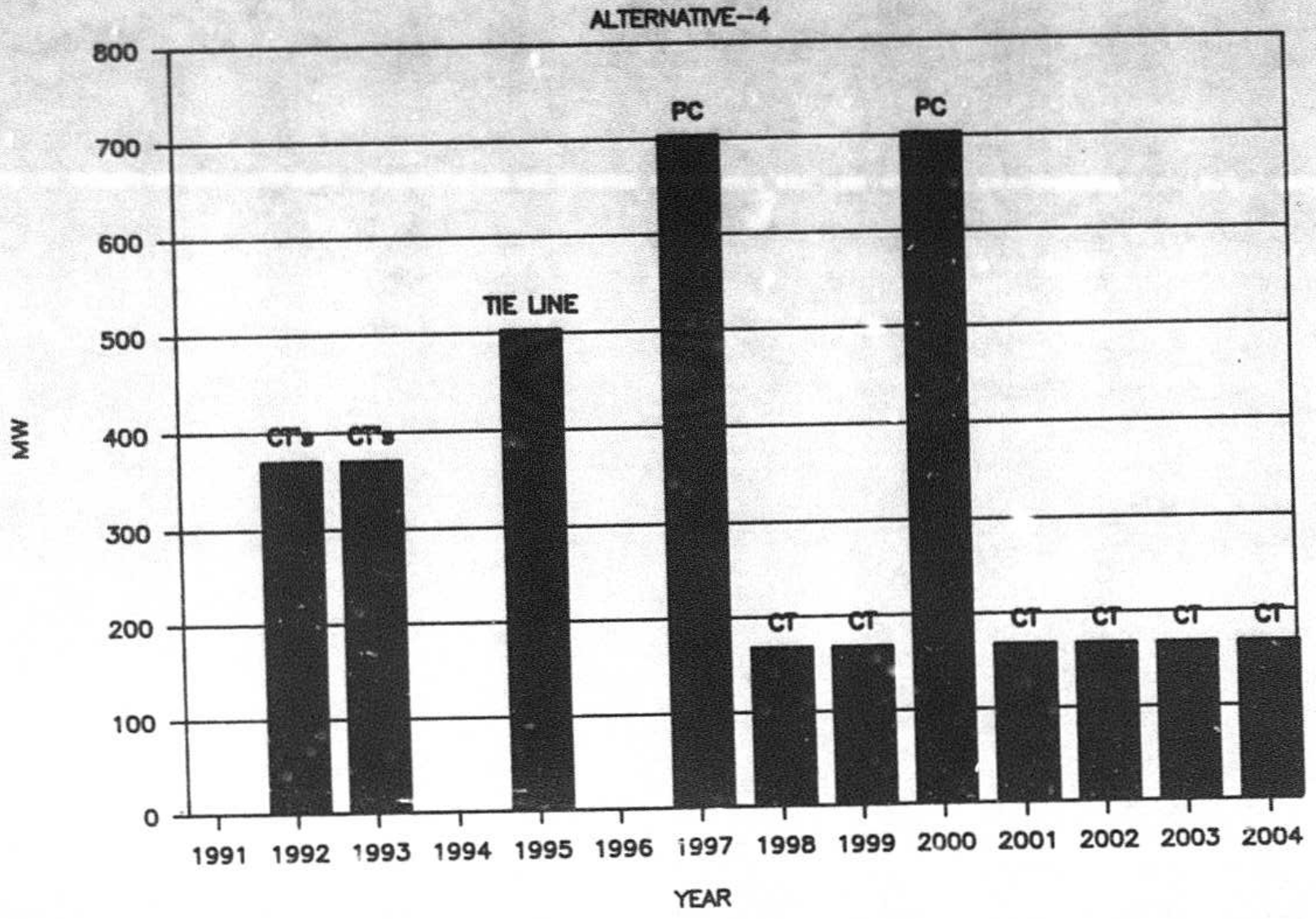
ADVANTAGES:

1. FUEL SUPPLY SECURITY.
2. PROVEN TECHNOLOGY.
3. FUEL FLEXIBILITY FOR FUTURE EMISSION REDUCTION.
4. COMBUSTION TURBINES COULD BE ADDED EARLY AS NEEDED.

DISADVANTAGES:

1. MUST SCRUB CR 4 & 5.
2. LONG CONSTRUCTION LEAD TIME FOR COAL UNIT.
3. CUM PW REV REQ IS $485 MILLION MORE THAN ALTERNATIVE 5.

1990 GENERATION FACILITY STUDY



ALTERNATIVE 5
PULVERIZED COAL AND COMBUSTION TURBINES

DESCRIPTION:

COMBINATION OF 1 – 700 MW COAL IN 1998, 1 – 700 MW IN 2000 AND 4 – 165 MW COMBUSTION TUBINES WITH A TOTAL INSTALLED CAPACITY OF 2060 MW.

SO2 EMISSION MODIFICATION:

CONVERT 1.1% TO 0.7% SULFUR COAL AT CR 1 & 2. CONVERT 2.5% TO 1.0 % SULFUR OIL AT BARTOW PLANT.

SO2 EMISSION TONAGE:

2001:	118,590
2005:	130,933

AVAILABLE FUTURE EMISSION CONTROL MEASURES:

OPERATIONAL:

1. CONVERT TURNER TO 1.0% SULFUR OIL (–5000 TONS).
2. CONVERT SUWANNEE TO 1.0 % SULFUR OIL (–500 TONS).

CAPITAL INVESTMENT:

SCRUB CR 1, 2, 4 & 5.

GENERATION MIX BY FUEL TYPES IN 2005:

COAL	51.03%	OIL	12.60%	MILLER	4.38%
NUCLEAR	10.51%	DISTILLATE	2.99%	QF	14.40%
GAS	0.63%	PURCHASE	3.46%		

CAPACITY MIX BY FUEL TYPES IN 2005:

COAL	30.78%	OIL	16.34%	MILLER	3.37%
NUCLEAR	6.41%	DISTILLATE	26.14%	QF	10.16%
GAS	0.00%	PURCHASE	6.80%		

ACCUMULATED PW REVENUE REQUIREMENT (1990–2019): $20,692,483,000

RISK ANALYSIS:

THIS ALTERNATIVE IS USED AS BASE CASE FOR COMPARISON.

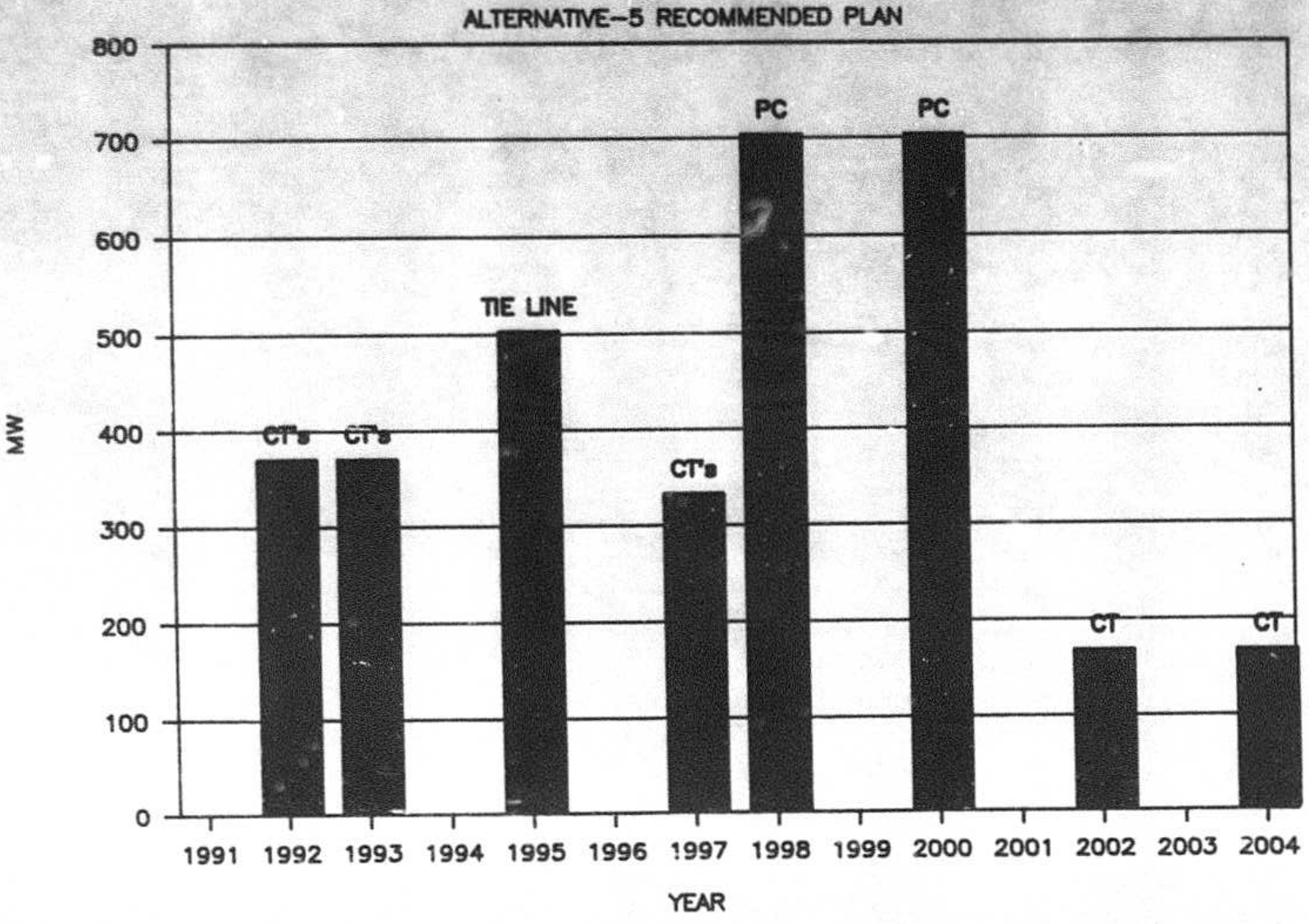
ADVANTAGES:

1. USES EXISTING AND PROVEN TECHNOLOGY.
2. NO SCRUBBING OF EXISTING COAL UNITS.
3. FUEL SUPPLY SECURITY.

DISADVANTAGES:

1. SYSTEM RELIABILITY SUFFERS IN 1997.
2. FUEL FLEXIBILITY IS LIMITED FOR FUTURE EMISSION REDUCTIONS SINCE FUEL SWITCHING WAS USED FOR EMISSION REDUCTION.

1990 GENERATION FACILITY STUDY



ALTERNATIVE 6

COMBINED CYCLE AND COMBUSTION TURBINES (SCRUB 4 & 5)

DESCRIPTION:

COMBINATION OF 7 – 235 MW OF COMBINED CYCLES AND 3 – 165 MW OF COMBUSTION TURBINES, WITH A TOTAL INSTALLED CAPACITY OF 2140 MW. GAS CONTRACT SECURED IN 2002.

SO2 EMISSION MODIFICATION:

SCRUB CR 4 & 5 AT 90% AND CONVERT 0.7% TO 1.1% SULFUR COAL. CONVERT 1.1% TO 0.7% SULFUR COAL AT CR 1 & 2. ALL CC ON GAS BY 2002.

SO2 EMISSION TONAGE:

2001:	126,352
2005:	121,585

AVAILABLE FUTURE EMISSION CONTROL MEASURES:

OPERATIONAL:

1. CONVERT BARTOW TO 1% SULFUR OIL (–15,000 TONS)
2. CONVERT TURNER TO 1% SULFUR OIL (–7,000 TONS)
3. CONVERT SUWANNEE TO 1% SULFUR OIL (–1,000 TONS)

CAPITAL INVESTMENT:

SCRUB CR 1 & 2.

GENERATION MIX BY FUEL TYPES IN 2005:

COAL	32.16%	OIL	18.98%	MILLER	6.02%
NUCLEAR	10.51%	DISTILLATE	2.64%	QF	14.40%
GAS	11.82%	PURCHASE	3.47%		

CAPACITY MIX BY FUEL TYPES IN 2005:

COAL	18.46%	OIL	16.31%	MILLER	3.37%
NUCLEAR	6.39%	DISTILLATE	24.70%	QF	10.15%
GAS	13.84%	PURCHASE	6.79%		

ACCUMULATED PW REVENUE REQUIREMENT (1990–2019): $21,144,995,000

RISK ANALYSIS:

THERE IS A 25% CHANCE THAT THIS ALTERNATIVE HAS A LOWER CUMULATIVE PW REV REQ THAN ALTERNATIVE 5.

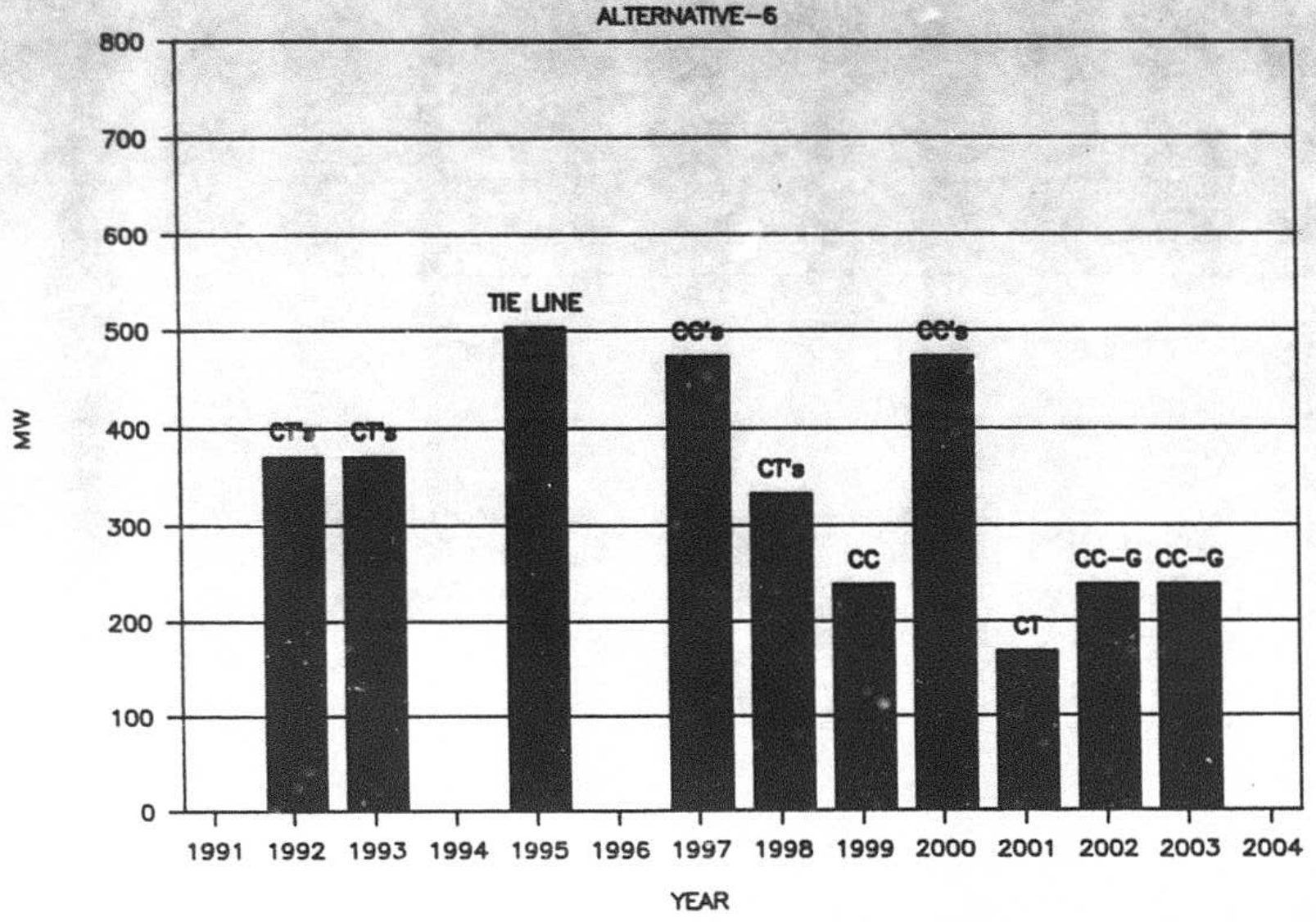
ADVANTAGES:

1. SHORT LEAD TIME ADDS CONSTRUCTION FLEXIBILITY.
2. BETTER FIT FOR GROWTH PATTERN.
3. FUEL FLEXIBILITY FOR FUTURE EMISSION REDUCTION.

DISADVANTAGES:

1. BECAUSE OF SCRUBBING, THIS ALTERNATIVE COSTS MORE THAN ALTERNATIVE 5 BEGINNING 2001.
2. CUM PW REV REQ IS ABOUT $452 MILLION MORE THAN ALTERNATIVE 5.

1990 GENERATION FACILITY STUDY



ALTERNATIVE 7
COMBINED CYCLE AND SCRUBBING IS NECESSARY

DESCRIPTION:

10 – 235 MW COMBINED CYCLES WITH A TOTAL CAPACITY OF 2350 MW

SO2 EMISSION MODIFICATION:

SCRUB ALL FOUR COAL UNITS AT CR AT 90%. CONVERT 0.7% TO 1.1% SULFUR COAL AT CR 4 & 5.

SO2 EMISSION TONAGE:

2001:	99,483
2005:	105,664

AVAILABLE FUTURE EMISSION CONTROL MEASURES:

OPERATIONAL:

1.CONVERT BARTOW FROM 2.5% TO 1.0% SULFUR OIL (–15,000 TONS).

2.CONVERT TURNER & SUWANEE FROM 2.5% TO 1.0% SULFUR OIL (–8,000 TONS)

CAPITAL INVESTMENT:

NONE.

GENERATION MIX BY FUEL TYPES IN 2005:

COAL	31.46%	OIL	19.29%	MILLER	6.05%
NUCLEAR	10.51%	DISTILLATE	12.15%	QF	14.40%
GAS	2.67%	PURCHASE	3.47%		

CAPACITY MIX BY FUEL TYPES IN 2005:

COAL	17.91%	OIL	16.07%	MILLER	3.32%
NUCLEAR	6.30%	DISTILLATE	39.71%	QF	10.00%
GAS	0.00%	PURCHASE	6.69%		

ACCUMULATED PW REVENUE REQUIREMENT (1990–2019): $21,449,248,000

RISK ANALYSIS:

THERE IS A 4% CHANCE THAT THIS ALTERNATIVE HAS A LOWER CUMULATIVE PW REV REQ THAN THE ALTERNATIVE 5.

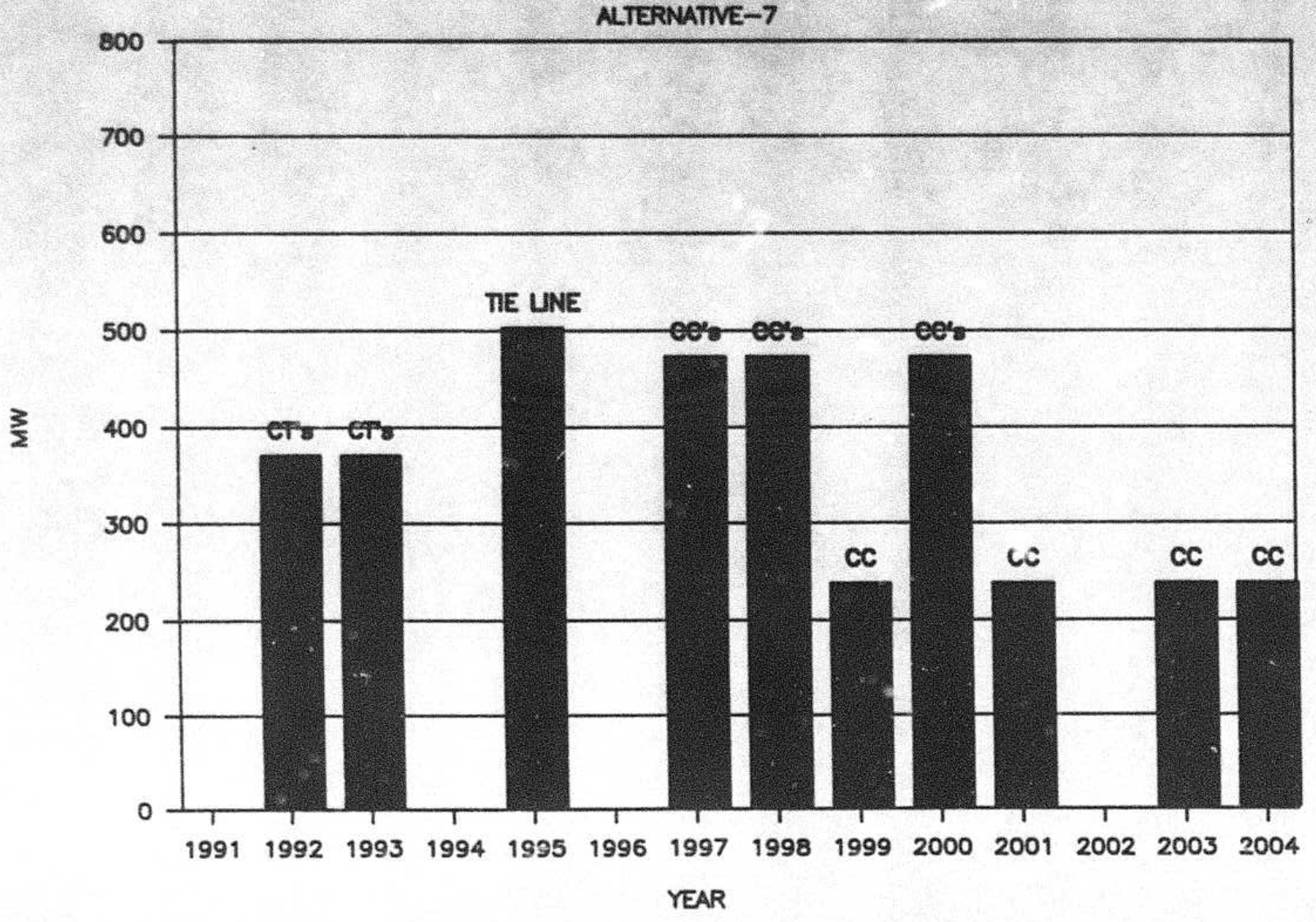
ADVANTAGES:

1. SHORT LEAD TIME FOR CONSTRUCTION.
2. FUEL FLEXIBILITY FOR FUTURE EMISSION REDUCTION.
3. SO2 EMISSIONS ARE WELL BELOW EXPECTED LIMIT.

DISADVANTAGES:

1. ONE OF THE MOST EXPENSIVE ALTERNATIVES.
2. HIGH OIL DEPENDENCY.
3. HIGH RISK OF COSTS THAT ARE GREATER THAN MOST ALTERNATIVES.

1990 GENERATION FACILITY STUDY



ALTERNATIVE 8
COMBINED CYCLE AND GAS IS AVAILABLE

DESCRIPTION:

10 – 235 MW COMBINED CYCLES WITH A TOTAL INSTALLED CAPACITY OF 2350 MW.
GAS IS AVAILABLE BEGINNING 1998.

SO2 EMISSION MODIFICATION:

SCRUB CR 4 & 5 AT 90%. CONVERT 0.7% TO 1.1% SULFUR COAL AT CR 4 & 5.
CONVERT 2.5% TO 1% SULFUR OIL AT TURNER PLANT.

SO2 EMISSION TONAGE:

2001:	124,110
2005:	126,067

AVAILABLE FUTURE EMISSION CONTROL MEASURES:

OPERATIONAL:

1.CONVERT BARTOW FROM 2.5% TO 1.0% SULFUR OIL (-15,000 TONS).
2.CONVERT SUWANEE FROM 2.5% TO 1.0% SULFUR OIL (-8,000 TONS).
3.CONVERT CR 1 & 2 FROM 1.1% TO 0.7% SULFUR COAL (-20,000 TONS)

CAPITAL INVESTMENT:

SCRUB CR 1 & 2.

GENERATION MIX BY FUEL TYPES IN 2005:

COAL	32.18%	OIL	17.47%	MILLER	6.05%
NUCLEAR	10.51%	DISTILLATE	1.05%	QF	14.40%
GAS	14.87%	PURCHASE	3.47%		

CAPACITY MIX BY FUEL TYPES IN 2005:

COAL	18.14%	OIL	16.03%	MILLER	3.31%
NUCLEAR	6.28%	DISTILLATE	20.18%	QF	9.97%
GAS	19.43%	PURCHASE	6.66%		

ACCUMULATED PW REVENUE REQUIREMENT (1990–2019): $21,167,880,000

RISK ANALYSIS:

THERE IS A 25% CHANCE THAT THIS ALTERNATIVE HAS A LOWER CUMULATIVE PW REVENUE REQUIREMENT THAN ALTERNATIVE 5.

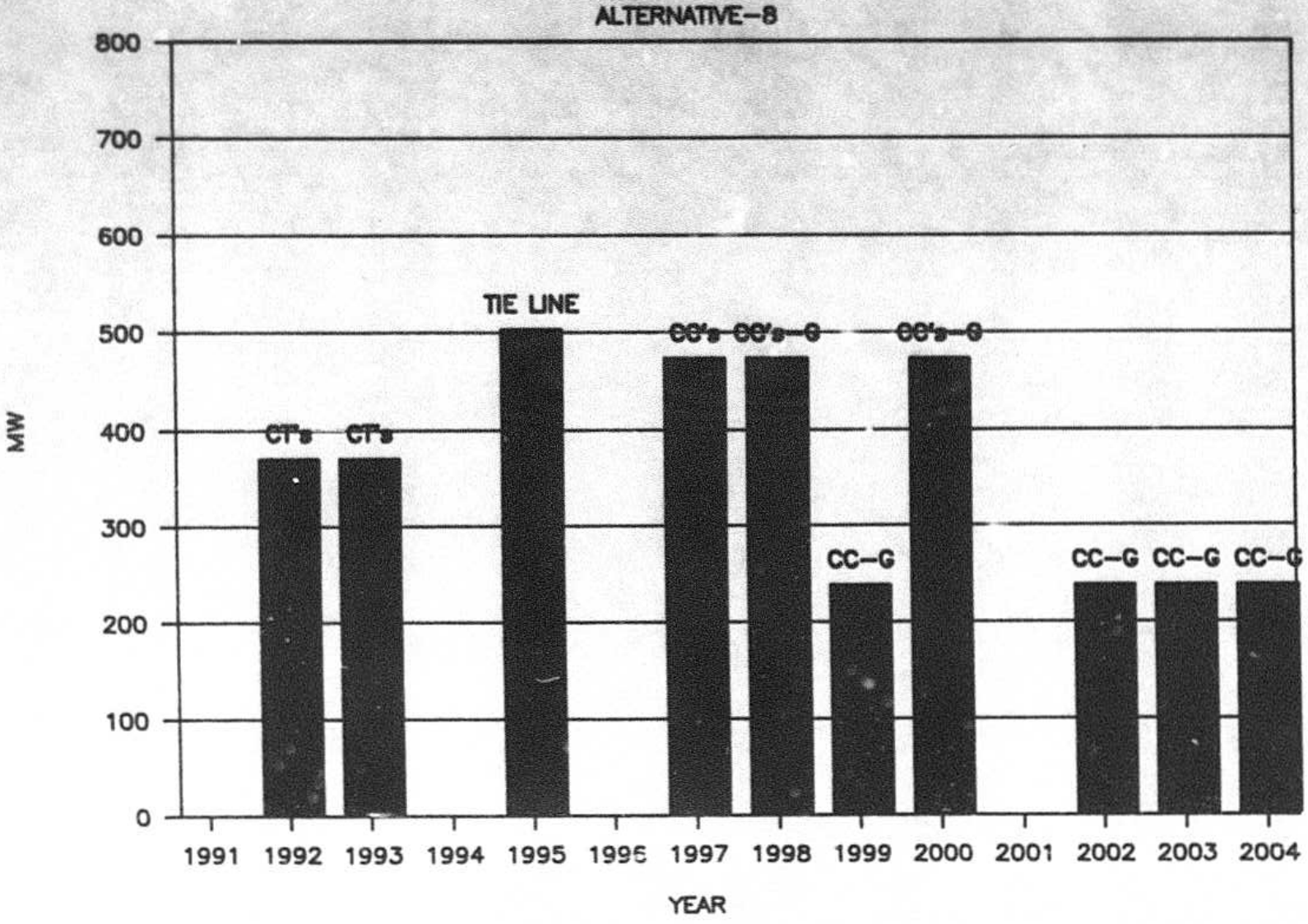
ADVANTAGES:

1. RELATIVE SHORT LEAD TIME FOR CONSTRUCTION.
2. FUEL FLEXIBILITY FOR FUTURE EMISSION REDUCTION.

DISADVANTAGES:

1. HIGH GAS DEPENDENCY
2. GAS IS PROJECTED TO BE RELATIVELY EXPENSIVE IN THE FUTURE.
3. NEW GAS SUPPLY IS REQUIRED BY 1998.
4. CUMULATIVE PW REV REQ IS ABOUT $475 MILLION MORE THAN ALTERNATIVE 5.

1990 GENERATION FACILITY STUDY



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